

--35. A semiconductor device according to claim 29, wherein said lead frame further includes suspension leads continuously formed with said die pad.--

Q1 --36. A semiconductor device according to claim 34, wherein said resin body has a tetragonal shape in said plane view, and wherein said suspension leads extend from said die pad toward four corners of said resin body.--

REMARKS

Claims 22-36 are pending in this application. By this Amendment, claims 1-21 are canceled, the title is amended and new claims 22-36 are added. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version With Markings To Show Changes Made."

The Office Action indicates that the title of the invention is not descriptive. It is respectfully submitted that the new title is indicative of the invention to which the claims are directed.

The Office Action rejects claim 12 under 35 U.S.C. §112, second paragraph. Claim 12 has been canceled and therefore the rejection is moot.

The Office Action rejects claims 1, 2, 4-7 and 12 under 35 U.S.C. §102(e) by U.S. Patent 5,637,913 to Kajihara et al. (hereafter Kajihara). The Office Action also rejects claim 3 under 35 U.S.C. §103(a) over Kajihara in view of Japan 63-271939 to Yamamoto. By this Amendment, claims 1-7 and 12 are canceled and new claims 22-36 are added. Claims 22-36 are believed to define patentable subject matter over the cited references for at least the reasons set forth below.

Independent claim 22 recites a semiconductor device that includes a semiconductor chip having a plurality of semiconductor elements and bonding pads formed on the main surface. An organic film is formed to cover the main surface. Claim 22 further recites a lead frame having a die pad for supporting the semiconductor chip, a plurality of bonding wires, a resin body sealing the semiconductor chip, the inner leads of the plurality of leads, the die pad and the plurality of bonding wires. A size of the die pad is smaller than a size of the semiconductor chip in a plane view. The semiconductor chip is disposed on the die pad such that the rear surface of the semiconductor chip is fixed to the die pad by an adhesive. Parts of the resin body contact with the organic film of the semiconductor chip and a portion of the rear surface of the semiconductor chip except for an area to which the die pad is fixed.

Utilizing these features, the die pad may have a small size and the main surface of the semiconductor chip may be covered by the organic film. Thereby, cracking on the resin body may be prevented at the vicinity of the die pad in the heat-treatment step of the solder-reflow and/or the thermal history after surface-mounting of the package. At the same time, cracking of the resin body at a vicinity of the main surface of the semiconductor chip may be prevented. Thus, a resin mold package having high thermal reliance can be provided.

The cited references do not teach or suggest all these features of independent claim 22. That is Kajihara merely discloses that the resin mold package (30) may have a smaller die pad (3) than the chip (2). Kajihara does not disclose that the organic film covers the main surface of the chip (2) as that feature is recited in independent claim 22. The Office Action asserts that Kajihara's top of the chip (2) may be covered by a layer of organic material as shown in Fig. 30. However, Kajihara does not disclose this organic material as recited in claim 22. That is, Kajihara does not teach or suggest an organic film to cover the main

surface (of the semiconductor chip) and the organic film having openings exposing the bonding pads.

Yamamoto shows that the layer formed in the main surface of the chip (5) is a photo-sensitive organic film (4). However, Yamamoto does not show the use of a die pad being smaller than a size of the semiconductor chip as recited in independent claim 22. Rather, Yamamoto shows a larger size die pad than the chip (5).

Furthermore, applicants respectfully submit that there is no motivation to combine Kajihara and Yamamoto as suggested in the Office Action. In particular, Yamamoto is directed to a larger size die pad than the chip (5). This clearly differs from Kajihara's teachings and thus the alleged combination is contrary to the references teachings.

In embodiments of the present invention, the main surface of the chip may be covered by the organic film to prevent that the adhesion strength between the main surface of the chip and the resin sealing body becoming lower than the adhesive strength between the exposed rear surface of the chip and the resin body due to the use of the small size die pad. That is, the combination of the smaller sized die pad and the selection of organic film on a chip is considerably important.

For at least the reasons set forth above, it is respectfully submitted that independent claim 22 defines patentable subject matter. Independent claim 29 is also believed to define patentable subject matter for similar reasons. Claims 23-28 depend from claim 22 and claims 30-36 depend from claim 29 and therefore also define patentable subject matter. Withdrawal of the outstanding rejections are respectfully requested.

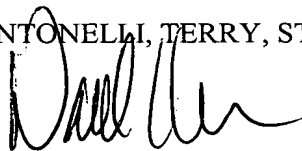
CONCLUSION

In view of the foregoing, it is respectfully submitted that the above identified application is in condition for allowance. Favorable consideration and prompt allowance of claims 22-36 are respectfully requested.

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Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'David C. Oren', is written over the printed name.

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Claims 1-21 have been canceled.

New claims 22-36 have been added.